MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 1368 1915 Southridge Drive Jefferson City, Missouri 65102 (314) 751-3241

August 31, 1983

Mr. David Murray
Reitz and Jens, Inc.
1040 North Lindbergh Blvd.
St. Louis, MO 63132

RE: Submittal of June 20, 1983 Westlake Landfill Hydrogeologic Study

Dear Mr. Murray:

The Waste Management Program has reviewed your latest submittal concerning the Westlake Landfill. Although this information begins to describe for the Westlake site the items needed for a proposal for evaluating the site to determine its hydrogeologic aspects, numerous questions and concerns remain which need to be addressed. These items are noted in the following sections.

Geology

The proposal notes that there are two possible settings which direct the water movement at the site. One is the area along the toe of the bluff and the other is the alluvial floodplain. The proposal does not pursue how the water movement along the bluffs affects or interacts with the landfill site, or what data or information is available to support this theory. Does this area along the bluff include the quarries? If not, are the quarries considered part of the alluvial floodplain? Please include a rationale as to how an exploration program could resolve these questions. The possible effects that the presence of these quarries have on groundwater movement should also be considered in the investigation.

Movement in the alluvial floodplain was categorized into two possible patterns. The submitted information indicates that movement may follow the direction and fall of the Missouri River Valley and is further influenced by the river fluctuations. Consequently, how does the valley and the site's location possibly affect the water movement in the vicinity of the site? Could this movement be the one discussed earlier in which liquid leaving the site flows directly toward the river in a north-northeast direction? What data is available to support this supposition? How will the exploration program be conducted to verify or change these assumptions?

The other possible movement in the floodplain was liquid flowing in a fan-like pattern away from the landfill. Again, what data was used and what is its reliability which lead to this hypothesis? How will the exploration program be carried to evaluate these hypothesis?

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Information supplied regarding the soils which composes the alluvium appears to be contradictary. It was stated that soils in this area are not stratified but communication does exist between various layers (whose composition, position relative to each other, and elevations are not included) and the possibility of "perched" water tables exists. Clarification regarding the above is needed. Is there any soil boring information available which defines the soils in this area and indicates the possibility of a perched water table? If so, the boring logs should be included in the report.

Well Placement

As noted above, three possible directions or patterns of water movement may exist at this site. However, the placement of only three wells does not appear to be able to detect these possibilities and determine which, if any, of these movements are in fact present at the site.

Proposed new wells (downgradient) were not placed in the north-northeast areas or along the east or west side to define the fan-like movement, possible influence of the bluffs or possible movement in the north-northeast direction (is the placement of only one downgradient well in the northeast area sufficient to define whether or not this pattern exists?) from the site.

In past correspondence and during the meeting of June 13, utilization of the old monitoring wells was questioned due to uncertainties regarding the construction of these wells, their present condition, and the possibilities of influences moving into the wells other than those associated with the groundwater. These wells will not be utilized for future sampling and analysis which is to take place in Phase III of the study. The future analyses which are to be run on samples following approval of the design of a monitoring system will be much more extensive than the current list of annual parameters utilized by the majority of sanitary landfills in the state. It does not appear to be an efficient utilization of resources to sample wells of questionable value when the analyses of these samples is expensive and the wells could be giving a false picture of what is occurring at the site. Consequently, as new wells will need to be installed in this area for future sampling it is recommended that wells should be installed in this area for the Phase I effort to achieve a true picture of the gradients.

If leachate or contamination is stratifying, wouldn't cluster wells installed at this time serve a two-fold purpose as opposed to not obtaining data on possible perched water tables or vertical liquid

movement? It has not been clarified why the majority of wells have a 40 foot depth. Why must 80 feet remain between the upgradient wells and the bedrock? What is the bedrock in this area?

Surface Ponds

A drawing showing the extent of these ponds and their depths is needed. Definition of and specifics regarding the "blowout" which occurred is needed. Why did this event lead you to the supposition that the ponds are interconnected with the Missouri alluvium sands?

Well Installation

As was specified during the meeting of June 13, 1983, care must be taken in recording the logs and water levels when well installation takes place. As proposed, water levels will be recorde' when the well is drilled. Will responses also be recorded 24 and 4? following installation?

Phases/Timetables

As previously discussed, the wells should be monitored ... minimum of twelve months on a bi-weekly basis (and more frequently depending on conditions as noted in the proposal). Once all of the data are collected it is the responsibility of the consultant to not only summarize the data but to include an interpretation of the results, supply an opinion as to the hydrogeologic considerations that will need to be taken into account during the design, and finally to design the monitoring system. DNR will then review the interpretation and design.

It would appear more appropriate to analyze all the wells for background data prior to designing the monitoring system (i.e., after all the wells have had water level recorded readings for 12 months and before Phase III). The outline of the three phases did not include a review of anticipated results from the monitoring or what actions are planned in response to any of the various possible scenarios which could be determined from the data collected. The proposed timetable should be revised to reflect all the comments included under this heading.

It is hoped that the next response will sufficiently address the five items of a proposal for a hydrogeologic study as originally required by the letter of January 31, 1983. It is important that an adequate

proposal is compiled prior to construction to avoid unnecessary costs due to improper placement or installation. As described in the January letter, the site is currently without a monitoring system. Further delays in compiling an approvable proposal will need to be avoided to insure that construction of the Phase I monitoring wells can be initiated during favorable weather and to enable a determination to be made as soon as possible regarding the site's status.

It is anticipated that a response to these questions and concerns will be submitted by September 30, 1983.

Sincerely,

Geri Kountzman
Environmental Engineer
Waste Management Program

GK:dl

cc: Mr. Bill McCullough
St. Louis Regional Office

bcc: John Doyle
Art Groner
Jim Williams